

REMARKS

The Examiner's attention to the present application is noted with appreciation.

The Examiner rejected claims 1, 2, 7, 8, 11, 12, 17, and 18 under 35 U.S.C. 102(b) as being anticipated by Bell. The rejection is traversed.

Regarding claims 1 and 11, Bell discloses a system for automatic evaluation of the psychological effect of a document. This is basically an expert system for predicting theoretical responses to a visual display. Applicant's claims 1 and 11 are directed to collecting and displaying actual viewer reactions to a visual display. Bell does not disclose or suggest "displaying the display object with an aspect of a display of each spatial region being a function of the viewer reactions for the region". In fact, in that Bell is concerned with predicting theoretical responses, it teaches away from the present invention which displays actual responses by viewers.

Applicant's claims relate to the collection and display of actual viewer reactions to systematically divided regions of a document. Bell relates to predicting such reactions through an expert system. The "viewer" in Bell is actually the designer of the document, not a viewer whose reactions are being gauged. Furthermore, while Bell discloses a means of reporting the predictive analysis of a document based on predetermined regions, Bell does not disclose displaying the predictive analysis, much less actual end-user responses, of the entire document divided into such regions. The grid shown in Bell's Figure 3 is a fine-grained grid associated with the process of analysis and is not disclosed as a basis for display of results in regions to the program operator.

Concerning claims 7 and 17, although both Bell and Applicant use the word "tingeing," this word is being used in significantly different ways. Bell discloses a method for evaluation of existing tingeing in the display being analyzed. In contrast, Applicant's claim 7 discloses the use of tingeing as a way of representing viewers' reactions to a display in the displaying step (recall that Bell does not even employ such a displaying step). Accordingly, claim 7 is patentable over Bell.

The Examiner rejected claims 1, 2, 4, 9, 11, 12, 14, and 19 under 35 U.S.C. 102(b) as being anticipated by Borah. The rejection is traversed, particularly as to the claims as amended.

Borah discloses a method of evaluation of viewer attention based on limited regions determined by the operator of the method. The point of Borah's method is to objectively determine relative amounts of attention, as measured by gaze. The point of Applicant's method is to collect and display viewers' higher-level cognitive reactions, such as recognition, as well as other subjective reactions. Borah is limited to the collection of externally observed physical data about eye-gaze; in contrast, Applicant's method gathers verbal reports from viewers with respect to their internal cognitive processes. So while Borah discloses a method of dividing the display for the purposes of collecting information on end-user gaze, it does not meet the limitation on associating subjective viewer reactions to displays. In focusing on objective external data, Borah teaches away from the present invention.

The Examiner rejected claims 1, 4, 5, 8, 10, 11, 14, 15, 18, and 20 under 35 U.S.C. 102(e) as being anticipated by Tognazzini. The rejection is traversed, particularly as to the claims as amended.

Tognazzini discloses a method of tracking an end-user's eye-gaze, determining the position of the end-user's gaze in a computer display, and selecting and increasingly magnifying areas to which the end-user's gaze is directed. Accordingly, the comments above as to Borah apply equally to this grounds of rejection.

The Examiner rejected claims 3, 6, 7, 13, 16, and 17 under 35 U.S.C. 103(a) as being unpatentable over Borah. The rejection is traversed, particularly in view of the comments above regarding Borah.

Regarding claims 3 and 13, the Examiner indicates that Borah fails to disclose the duration of $\frac{1}{4}$ to 4 seconds and believes it would have been obvious to one of ordinary skill in the art at the time to modify Borah to make the duration of the commercial scene ("display object") between $\frac{1}{4}$ to 4 seconds to vary the scene in order to prevent screen burning. This analysis is flawed for at least two reasons:

(i) Borah exclusively involves evaluation of dynamic video. The point of the invention is to generate a distribution of actual looking times. So extending Borah's method to short-duration segments, especially as short as $\frac{1}{4}$ to 4 seconds, would go against the central point of Borah's invention.

(ii) It is pointless to try to prevent screen-burning by limiting displays to periods of $\frac{1}{4}$ to 4 seconds. Screen burning is a phenomenon associated with extremely long-term display of video images on cathode-ray-tube video displays, such as is apparent, for example, on airport displays of arrival and departure information. The issue of screen burning is not conceivably posed by Borah, and the point of the $\frac{1}{4}$ to 4-second displays in Applicant's method is not to prevent screen burning but to evaluate cognitive functions such as recognition of images at various exposure times.

Consequently, claims 3 and 13 are patentable over Borah.

Regarding claims 6, 7, 16, and 17, the Examiner indicates that transparency and tingeing are notoriously well known in the art and that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Borah to display images with transparency or tingeing in order to provide colors that are optimal to the viewers' liking. This may well be true but is not relevant to the Applicant's claims. The Examiner's argument involves using transparency and tingeing of the underlying document in order to make the document itself more to the end-users' liking. That is, the Examiner is suggesting that Borah could be modified to include tingeing and transparency in the underlying images displayed to the end-users. In contrast, Applicant's claims have to do with using tingeing and transparency to represent viewer's reactions to the underlying images. That is, the tingeing and transparency are not being used for the purpose of directly improving the underlying image but rather for the purpose of conveying information to an analyst about user reactions to the underlying image. The tingeing and transparency are representations of data rather than esthetic or other design variations for an image. Moreover, Borah involves a method of determining the spatial distribution of attention to motion-

picture images, based on measurement of eye-gaze. Borah does not have anything to do with determining viewers' liking of an image. Consequently, claims 6, 7, 16, and 17 are patentable over Borah.

The Examiner also rejected claims 3, 6, 7, 9, 13, 16, 17 and 19 under 35 U.S.C. 103(a) as being unpatentable over Tognazzini. The rejection is traversed, and the comments above apply equally to this grounds of rejection.

Furthermore, regarding claims 3 and 13, the Examiner indicates that Tognazzini fails to disclose the use of periods of time ranging from $\frac{1}{4}$ to 4 seconds and believes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tognazzini to make the period of time between $\frac{1}{4}$ and 4 seconds so the user can quickly be presented a magnified view of the area. This analysis is flawed for at least three reasons:

(i) Tognazzini's method involves continuous, albeit dynamic, display of a document.

Applicant's method involves repeated short-duration displays of a document.

(ii) The point of Tognazzini's invention is to dynamically adjust a display based on end-user gaze. Tognazzini's method could not possibly involve short-duration displays of a document because it would have made tracking gaze much more difficult and would have made the display disconcerting for the user.

(iii) The point of Applicant's invention is to assess end-users' higher cognitive functions with respect to a display. That is why, for example, recognition is tested through displays ranging from $\frac{1}{4}$ to 4 seconds. Tognazzini's method for dynamically adjusting a display has nothing to do with the process of evaluating cognitive functions such as recognition.

Consequently, claims 3 and 13 are believed to be allowable over Tognazzini.

Regarding claims 6, 7, 16, and 17, the comments above as to Borah apply equally to Tognazzini.

Regarding claims 9 and 19, the Examiner indicates that Tognazzini fails to disclose gaze tracking of a motion picture. The Examiner suggests that gaze tracking of a motion picture is notoriously well

known in the art and that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tognazzini to gaze-track an area of a motion picture in order to expand areas of the image of interest to the user. This, again, is directed to analysis of objective data regarding the viewer rather than the viewer's subjective response(s). Applicant's invention is a method and apparatus for collecting information about a viewer's subjective reactions and displaying information about those reactions in motion picture format.

Consequently, claim 9 is patentable over Tognazzini.

An earnest attempt has been made to respond to each and every ground of rejection advanced by the Examiner. However, should the Examiner have any queries, suggestions or comments relating to a speedy disposition of the application, the Examiner is invited to call the undersigned.

Reconsideration and allowance are respectfully requested.

Respectfully submitted,

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